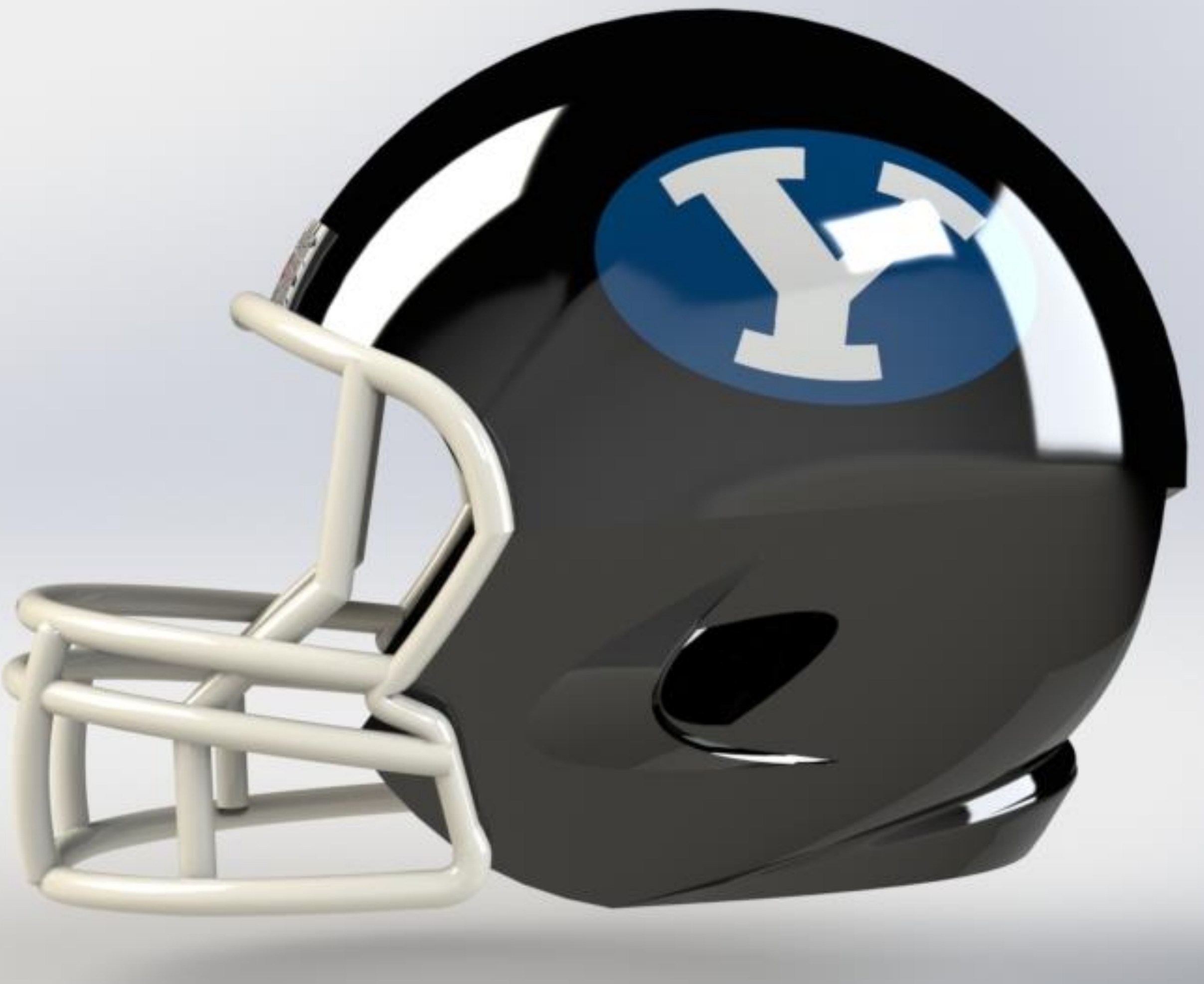
CAD Portfolio

Colten G. Yardley

Advanced Surface + Solid Modelling

Goal: Create a helmet that is aesthetically pleasing and matches the profile of a modelled human head.



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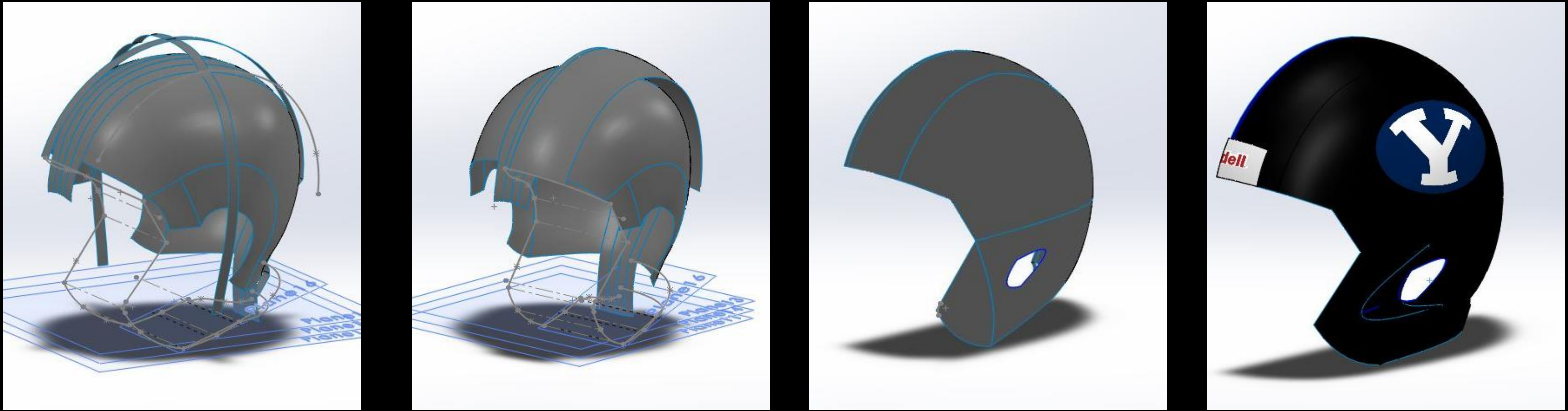


CAD STRATEGY

Advanced Surfacing – Detailed Sketching – Advanced Sweeps, Lofts, and Mirroring

Colten Yardley

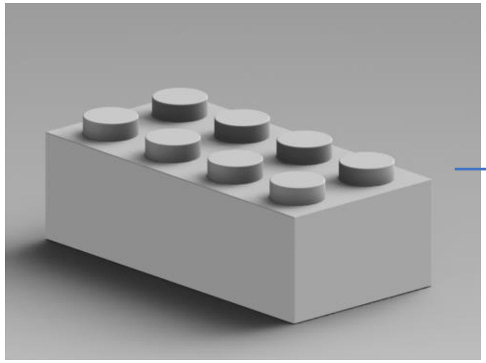
Spencer W. Kimball Tower

Created from Legos

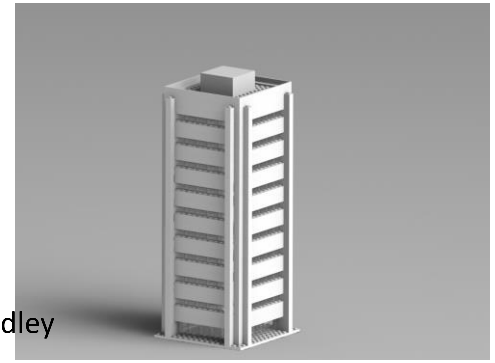
Colten Yardley

Design Table

Objective: Create a design table that can produce 36 different Lego pieces from a 2x4 brick Lego.



Product: Created the Spencer W. Kimball Tower. Composed of 1030 Lego pieces, all used through the design table of this 2x4 brick.



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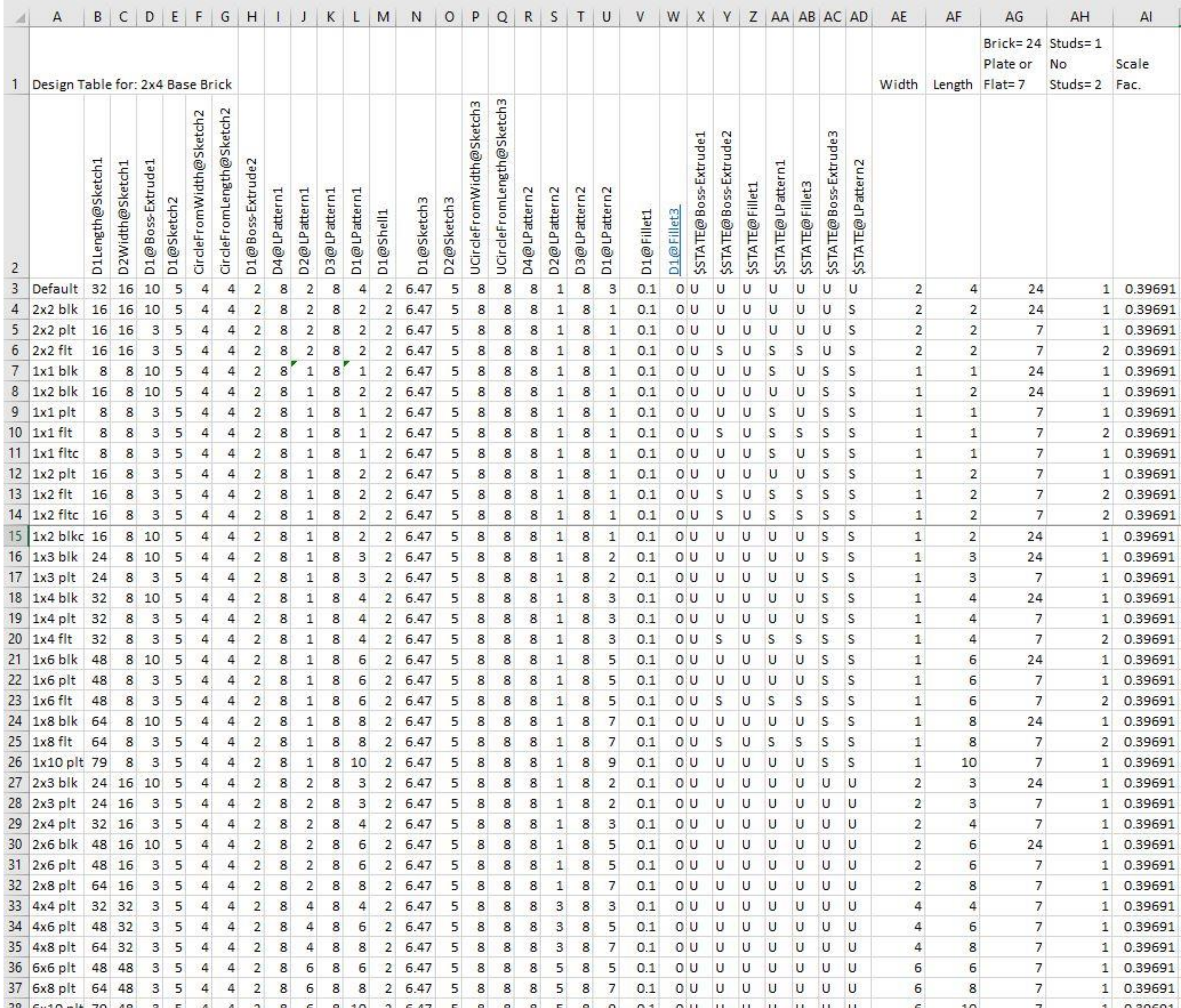
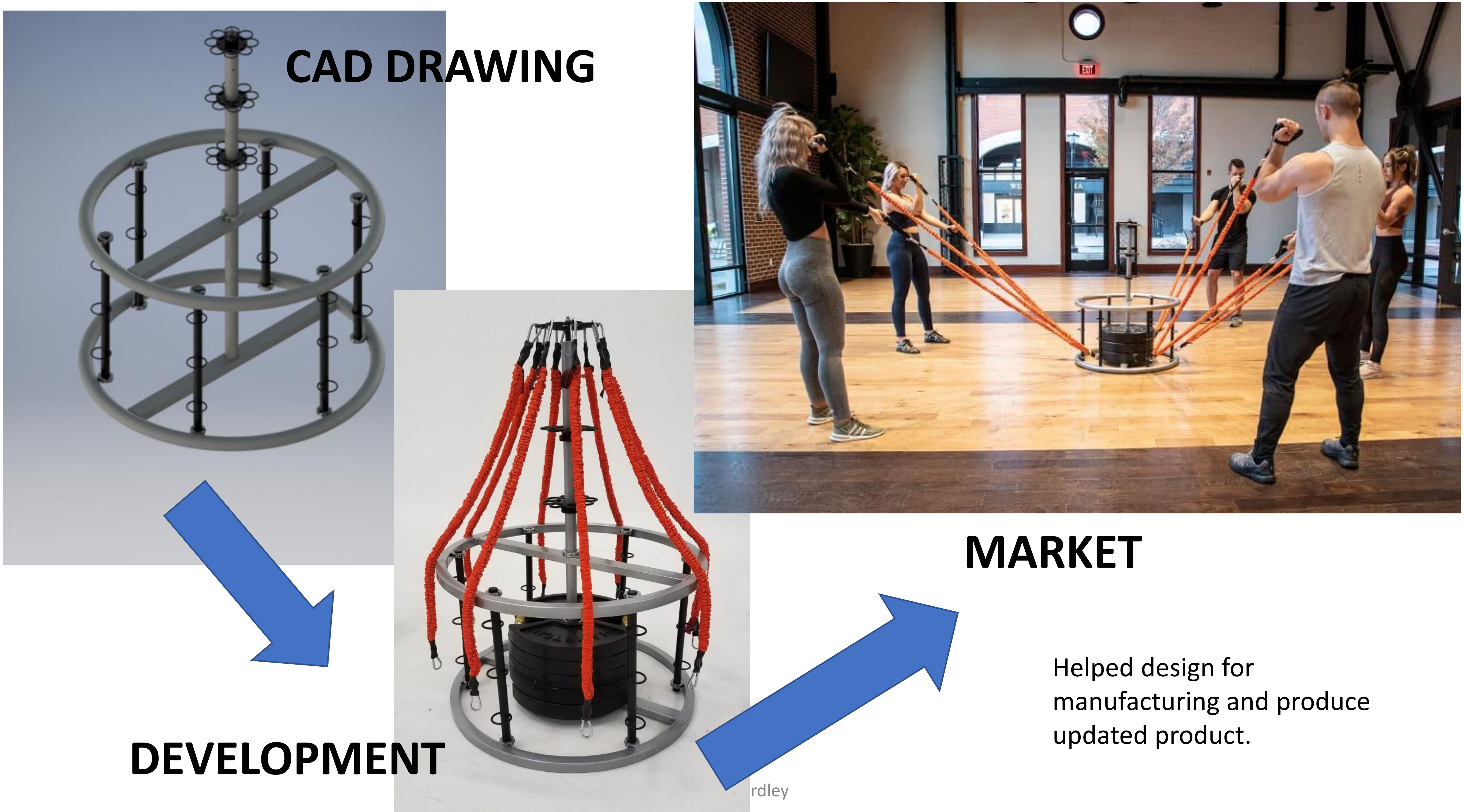


	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
1	Design Table for: 2x4 Base Brick																														Width	Length	Brick= 24 Plate or Flat= 7	Studs= 1 No Studs= 2	Scale Fac.
2		D1Length@Sketch1	D2Width@Sketch1	D1@Boss-Extrude1	D1@Sketch2	CircleFromWidth@Sketch2	CircleFromLength@Sketch2	D1@Boss-Extrude2	D4@LPattern1	D2@LPattern1	D3@LPattern1	D1@LPattern1	D1@Shell1	D1@Sketch3	D2@Sketch3	UCircleFromWidth@Sketch3	UCircleFromLength@Sketch3	D4@LPattern2	D2@LPattern2	D3@LPattern2	D1@LPattern2	D1@Fillet1	D1@Fillet3	$STATE@Boss-Extrude1	$STATE@Boss-Extrude2	$STATE@Fillet1	$STATE@LPattern1	$STATE@Fillet3	$STATE@Boss-Extrude3	$STATE@LPattern2					
3	Default	32	16	10	5	4	4	2	8	2	8	4	2	6.47	5	8	8	8	1	8	3	0.1	0	U	U	U	U	U	U	U	2	4	24	1	0.39691
4	2x2 blk	16	16	10	5	4	4	2	8	2	8	2	2	6.47	5	8	8	8	1	8	1	0.1	0	U	U	U	U	U	U	S	2	2	24	1	0.39691
5	2x2 plt	16	16	3	5	4	4	2	8	2	8	2	2	6.47	5	8	8	8	1	8	1	0.1	0	U	U	U	U	U	U	S	2	2	7	1	0.39691
6	2x2 flt	16	16	3	5	4	4	2	8	2	8	2	2	6.47	5	8	8	8	1	8	1	0.1	0	U	S	U	S	S	U	S	2	2	7	2	0.39691
7	1x1 blk	8	8	10	5	4	4	2	8	1	8	1	2	6.47	5	8	8	8	1	8	1	0.1	0	U	U	U	S	U	S	S	1	1	24	1	0.39691
8	1x2 blk	16	8	10	5	4	4	2	8	1	8	2	2	6.47	5	8	8	8	1	8	1	0.1	0	U	U	U	U	U	S	S	1	2	24	1	0.39691
9	1x1 plt	8	8	3	5	4	4	2	8	1	8	1	2	6.47	5	8	8	8	1	8	1	0.1	0	U	U	U	S	U	S	S	1	1	7	1	0.39691
10	1x1 flt	8	8	3	5	4	4	2	8	1	8	1	2	6.47	5	8	8	8	1	8	1	0.1	0	U	S	U	S	S	S	S	1	1	7	2	0.39691
11	1x1 fltc	8	8	3	5	4	4	2	8	1	8	1	2	6.47	5	8	8	8	1	8	1	0.1	0	U	U	U	S	U	S	S	1	1	7	1	0.39691
12	1x2 plt	16	8	3	5	4	4	2	8	1	8	2	2	6.47	5	8	8	8	1	8	1	0.1	0	U	U	U	U	U	S	S	1	2	7	1	0.39691
13	1x2 flt	16	8	3	5	4	4	2	8	1	8	2	2	6.47	5	8	8	8	1	8	1	0.1	0	U	S	U	S	S	S	S	1	2	7	2	0.39691
14	1x2 fltc	16	8	3	5	4	4	2	8	1	8	2	2	6.47	5	8	8	8	1	8	1	0.1	0	U	S	U	S	S	S	S	1	2	7	2	0.39691
15	1x2 blkc	16	8	10	5	4	4	2	8	1	8	2	2	6.47	5	8	8	8	1	8	1	0.1	0	U	U	U	U	U	S	S	1	2	24	1	0.39691
16	1x3 blk	24	8	10	5	4	4	2	8	1	8	3	2	6.47	5	8	8	8	1	8	2	0.1	0	U	U	U	U	U	S	S	1	3	24	1	0.39691
17	1x3 plt	24	8	3	5	4	4	2	8	1	8	3	2	6.47	5	8	8	8	1	8	2	0.1	0	U	U	U	U	U	S	S	1	3	7	1	0.39691
18	1x4 blk	32	8	10	5	4	4	2	8	1	8	4	2	6.47	5	8	8	8	1	8	3	0.1	0	U	U	U	U	U	S	S	1	4	24	1	0.39691
19	1x4 plt	32	8	3	5	4	4	2	8	1	8	4	2	6.47	5	8	8	8	1	8	3	0.1	0	U	U	U	U	U	S	S	1	4	7	1	0.39691
20	1x4 flt	32	8	3	5	4	4	2	8	1	8	4	2	6.47	5	8	8	8	1	8	3	0.1	0	U	S	U	S	S	S	S	1	4	7	2	0.39691
21	1x6 blk	48	8	10	5	4	4	2	8	1	8	6	2	6.47	5	8	8	8	1	8	5	0.1	0	U	U	U	U	U	S	S	1	6	24	1	0.39691
22	1x6 plt	48	8	3	5	4	4	2	8	1	8	6	2	6.47	5	8	8	8	1	8	5	0.1	0	U	U	U	U	U	S	S	1	6	7	1	0.39691
23	1x6 flt	48	8	3	5	4	4	2	8	1	8	6	2	6.47	5	8	8	8	1	8	5	0.1	0	U	S	U	S	S	S	S	1	6	7	2	0.39691
24	1x8 blk	64	8	10	5	4	4	2	8	1	8	8	2	6.47	5	8	8	8	1	8	7	0.1	0	U	U	U	U	U	S	S	1	8	24	1	0.39691
25	1x8 flt	64	8	3	5	4	4	2	8	1	8	8	2	6.47	5	8	8	8	1	8	7	0.1	0	U	S	U	S	S	S	S	1	8	7	2	0.39691
26	1x10 plt	79	8	3	5	4	4	2	8	1	8	10	2	6.47	5	8	8	8	1	8	9	0.1	0	U	U	U	U	U	S	S	1	10	7	1	0.39691
27	2x3 blk	24	16	10	5	4	4	2	8	2	8	3	2	6.47	5	8	8	8	1	8	2	0.1	0	U	U	U	U	U	U	U	2	3	24	1	0.39691
28	2x3 plt	24	16	3	5	4	4	2	8	2	8	3	2	6.47	5	8	8	8	1	8	2	0.1	0	U	U	U	U	U	U	U	2	3	7	1	0.39691
29	2x4 plt	32	16	3	5	4	4	2	8	2	8	4	2	6.47	5	8	8	8	1	8	3	0.1	0	U	U	U	U	U	U	U	2	4	7	1	0.39691
30	2x6 blk	48	16	10	5	4	4	2	8	2	8	6	2	6.47	5	8	8	8	1	8	5	0.1	0	U	U	U	U	U	U	U	2	6	24	1	0.39691
31	2x6 plt	48	16	3	5	4	4	2	8	2	8	6	2	6.47	5	8	8	8	1	8	5	0.1	0	U	U	U	U	U	U	U	2	6	7	1	0.39691
32	2x8 plt	64	16	3	5	4	4	2	8	2	8	8	2	6.47	5	8	8	8	1	8	7	0.1	0	U	U	U	U	U	U	U	2	8	7	1	0.39691
33	4x4 plt	32	32	3	5	4	4	2	8	4	8	4	2	6.47	5	8	8	8	3	8	3	0.1	0	U	U	U	U	U	U	U	4	4	7	1	0.39691
34	4x6 plt	48	32	3	5	4	4	2	8	4	8	6	2	6.47	5	8	8	8	3	8	5	0.1	0	U	U	U	U	U	U	U	4	6	7	1	0.39691
35	4x8 plt	64	32	3	5	4	4	2	8	4	8	8	2	6.47	5	8	8	8	3	8	7	0.1	0	U	U	U	U	U	U	U	4	8	7	1	0.39691
36	6x6 plt	48	48	3	5	4	4	2	8	6	8	6	2	6.47	5	8	8	8	5	8	5	0.1	0	U	U	U	U	U	U	U	6	6	7	1	0.39691
37	6x8 plt	64	48	3	5	4	4	2	8	6	8	8	2	6.47	5	8	8	8	5	8	7	0.1	0	U	U	U	U	U	U	U	6	8	7	1	0.39691



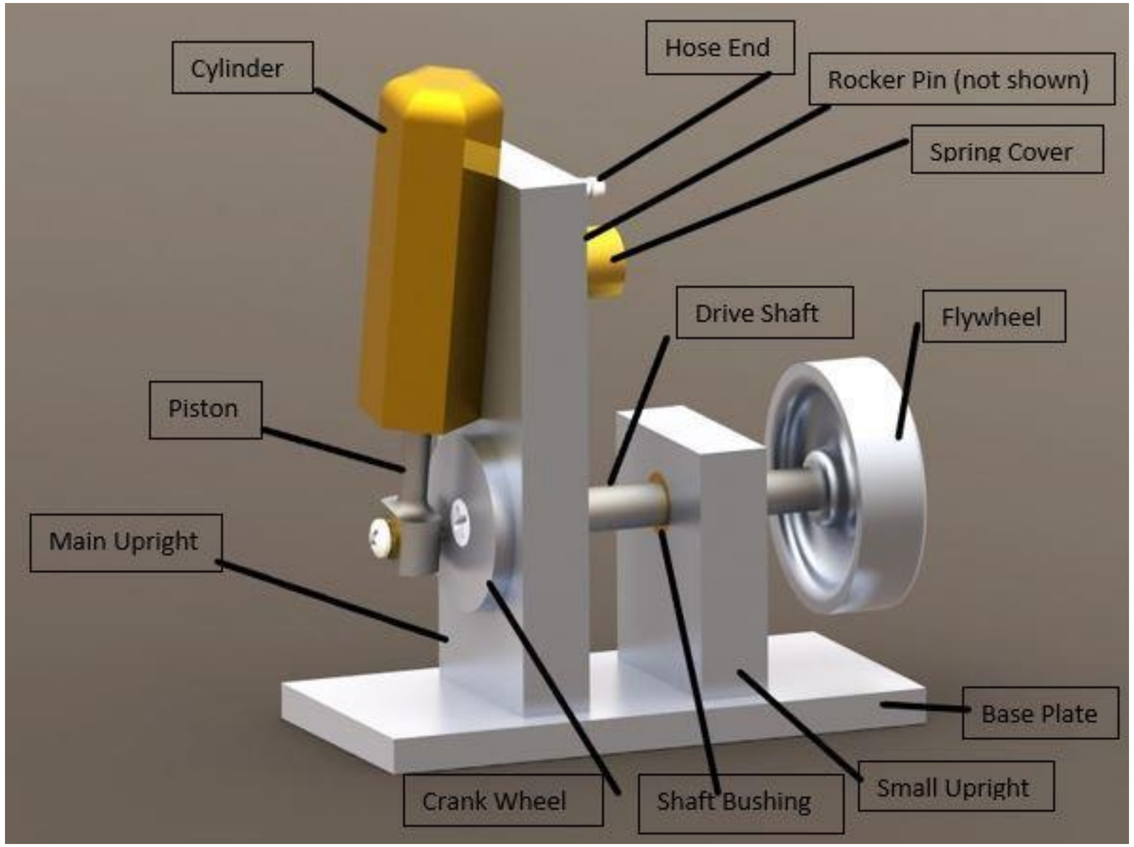
CAD DRAWING

DEVELOPMENT

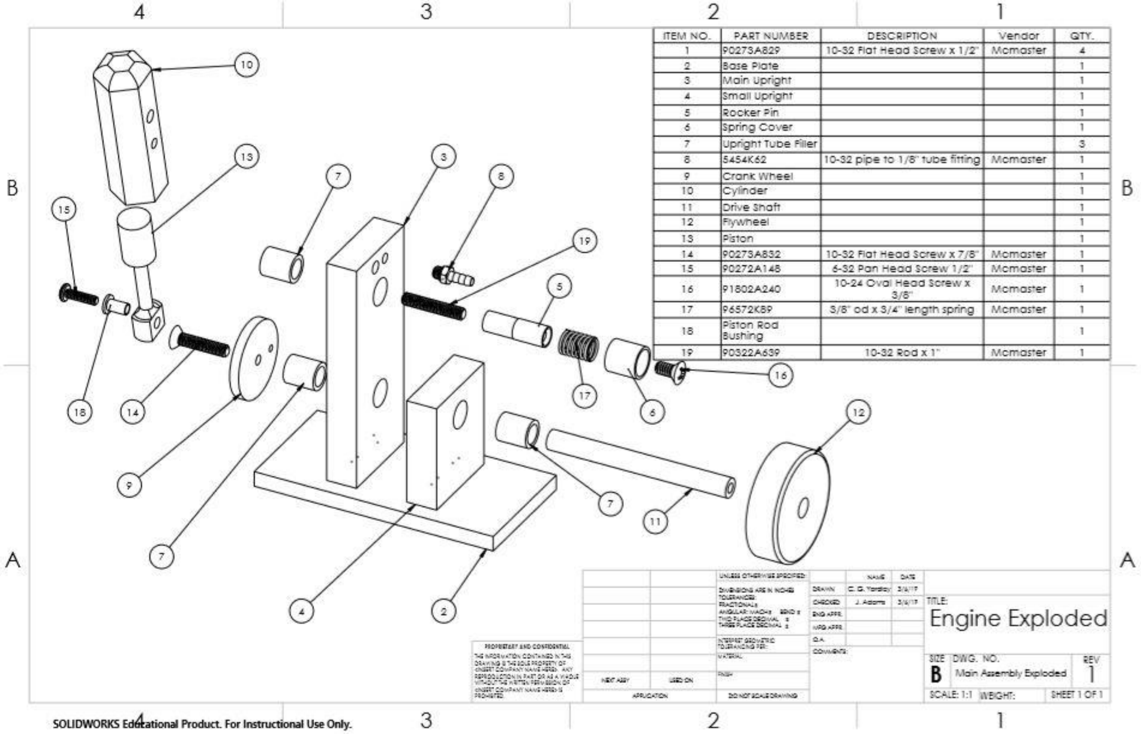
MARKET

Helped design for manufacturing and produce updated product.

Compressed Air Engine



Annotated Exploded Drawing with Parts List



ITEM NO.	PART NUMBER	DESCRIPTION	Vendor	QTY.
1	90273A829	10-32 Flat Head Screw x 1/2"	Mcmaster	4
2	Base Plate			1
3	Main Upright			1
4	Small Upright			1
5	Rocker Pin			1
6	Spring Cover			1
7	Upright Tube Filler			3
8	5454K62	10-32 pipe to 1/8" tube fitting	Mcmaster	1
9	Crank Wheel			1
10	Cylinder			1
11	Drive Shaft			1
12	Flywheel			1
13	Piston			1
14	90273A832	10-32 Flat Head Screw x 7/8"	Mcmaster	1
15	90272A148	6-32 Pan Head Screw 1/2"	Mcmaster	1
16	91802A240	10-24 Oval Head Screw x 3/8"	Mcmaster	1
17	96572K89	3/8" od x 3/4" length spring	Mcmaster	1
18	Piston Rod Bushing			1
19	90322A639	10-32 Rod x 1"	Mcmaster	1

	NAME	DATE
DRAWN	C. G. Yardley	3/6/17
CHECKED	J. Adams	3/6/17
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

TITLE: Engine Exploded

SIZE B DWG. NO. Main Assembly Exploded REV 1

SCALE: 1:1 WEIGHT: SHEET 1 OF 1

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL±
ANGULAR: MACH± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±

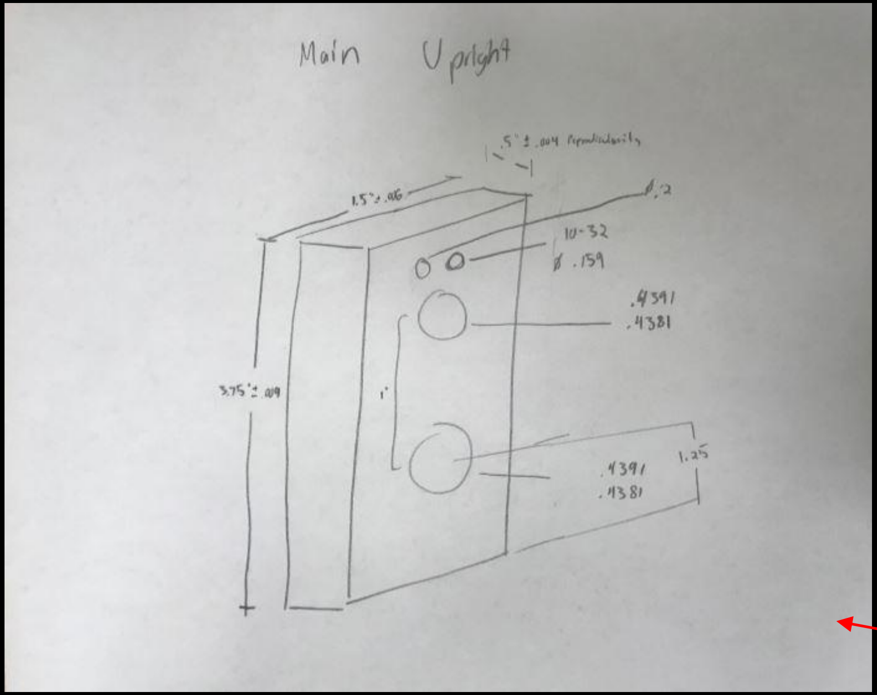
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL
FINISH

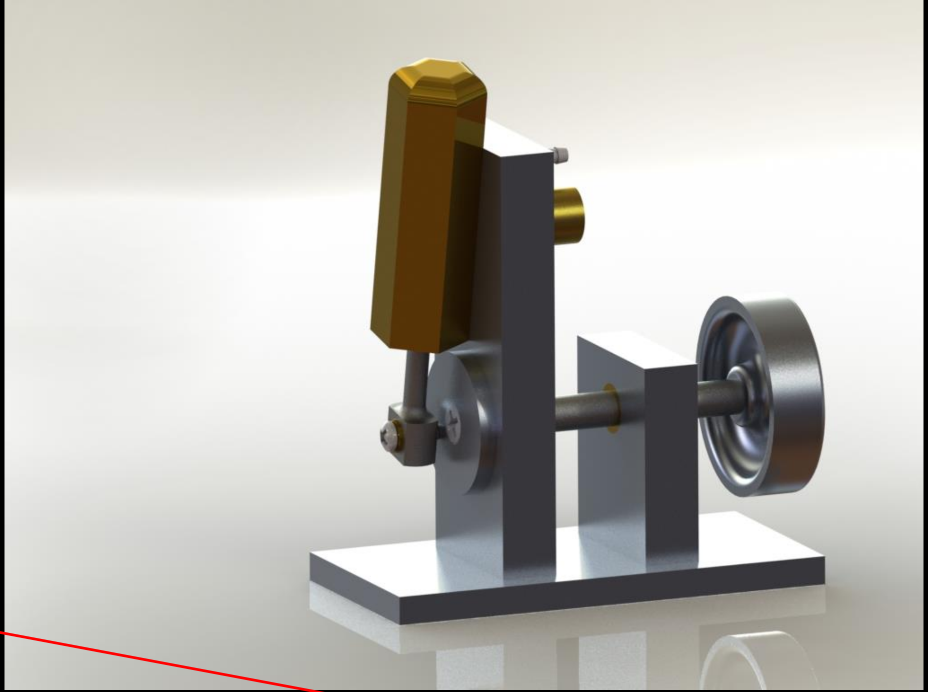
NEXT ASSY USED ON
APPLICATION DO NOT SCALE DRAWING

PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <INSERT COMPANY NAME HERE>. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <INSERT COMPANY NAME HERE> IS PROHIBITED.

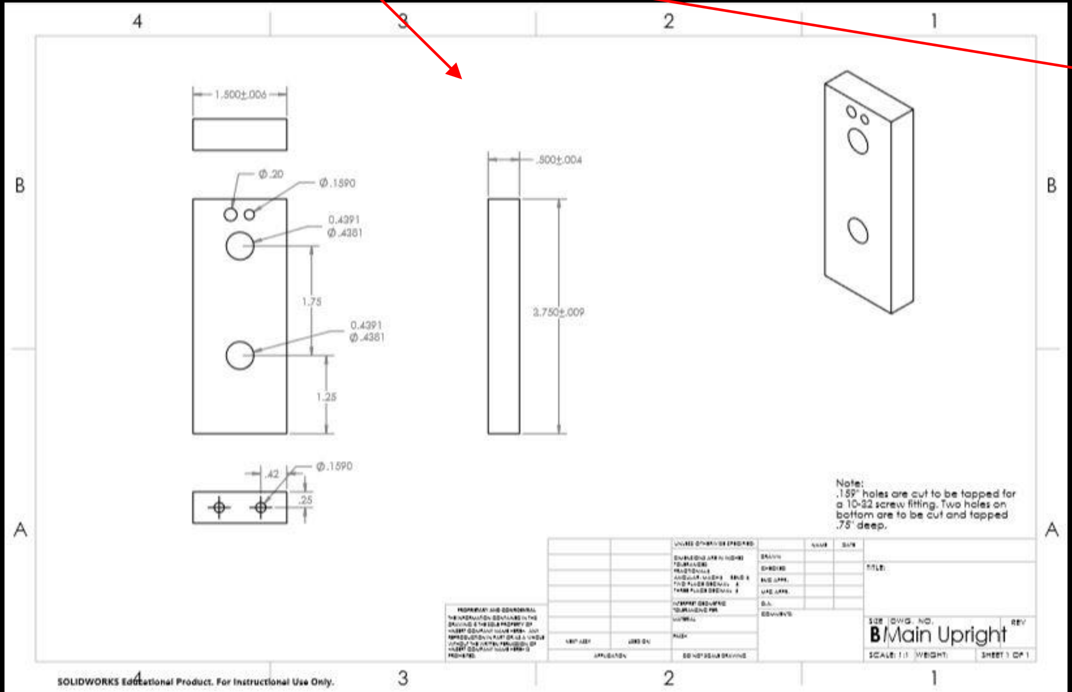
SOLIDWORKS Educational Product. For Instructional Use Only.

Objective: Create a full functioning compressed air engine. Provide a complete design package with detailed drawings sufficient for manufacturing.

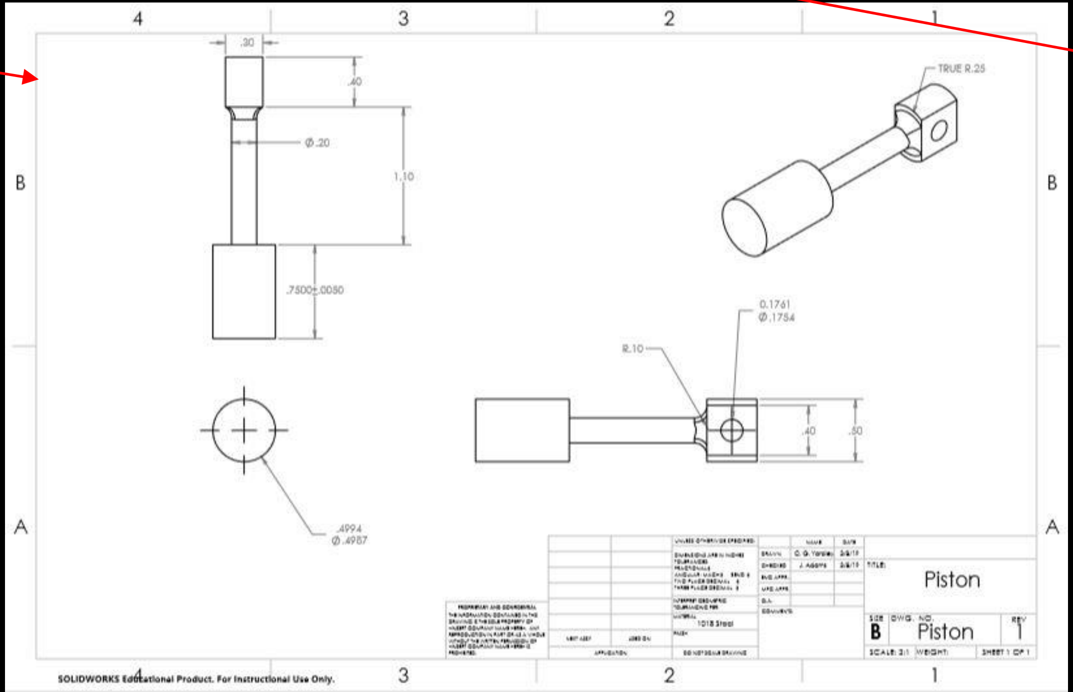




Drawings pulled from Design Package



Note:
.159" holes are cut to be tapped for a 10-32 screw fitting. Two holes on bottom are to be cut and tapped .75" deep.

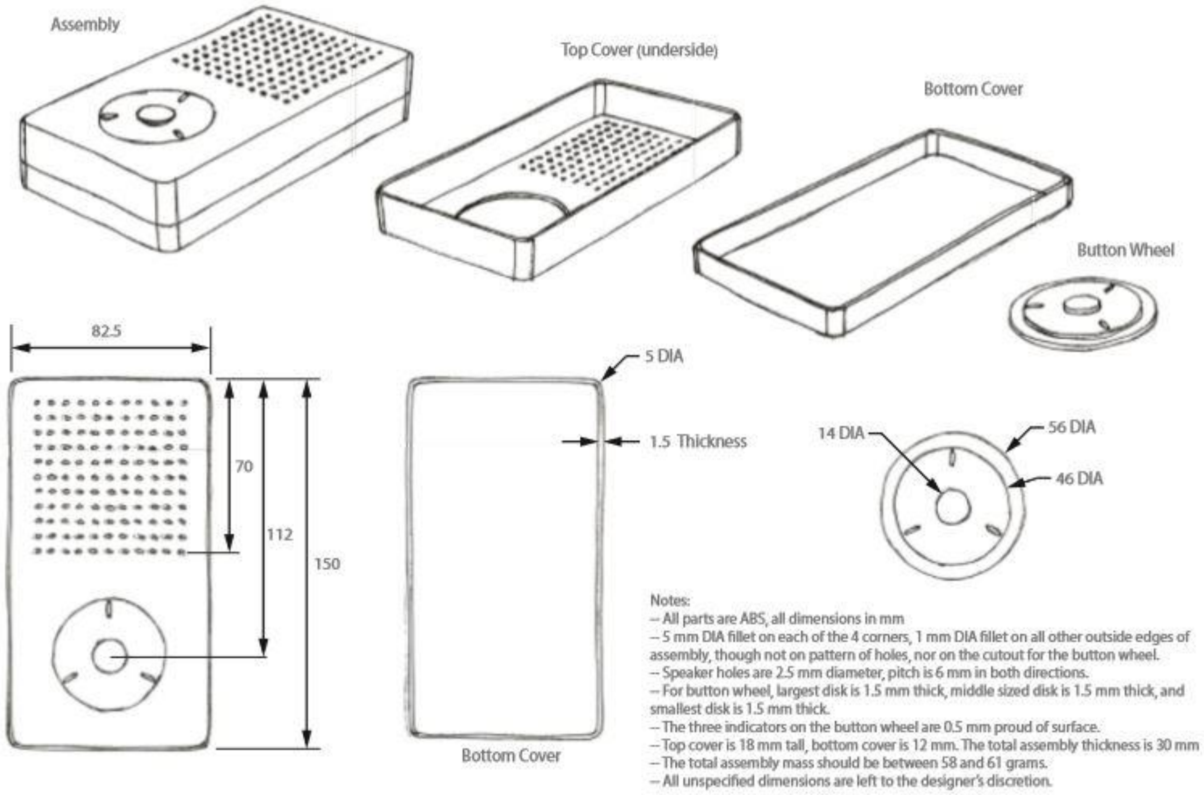


Simple Idea Hand Drawing

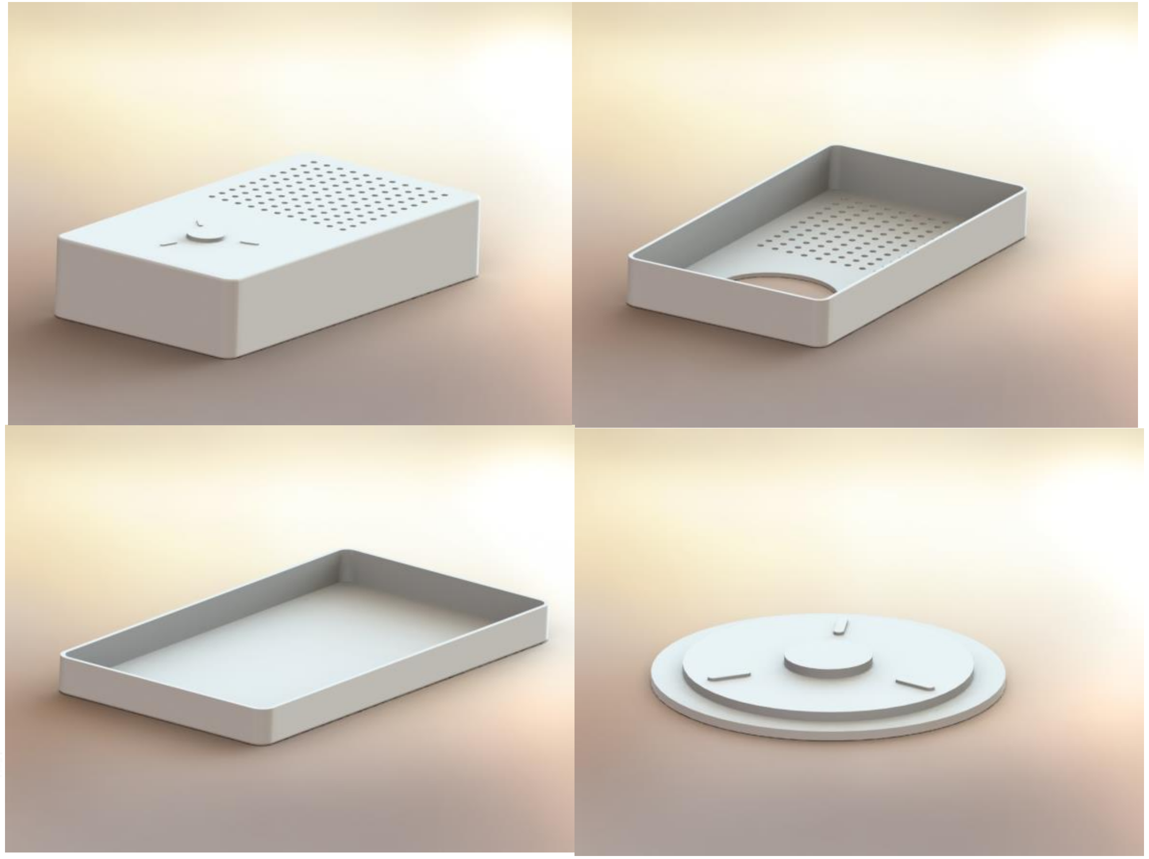
Colten Yardley

Rams Radio

Objective: Timed Evaluation. Use given information to produce a Rams Radio.



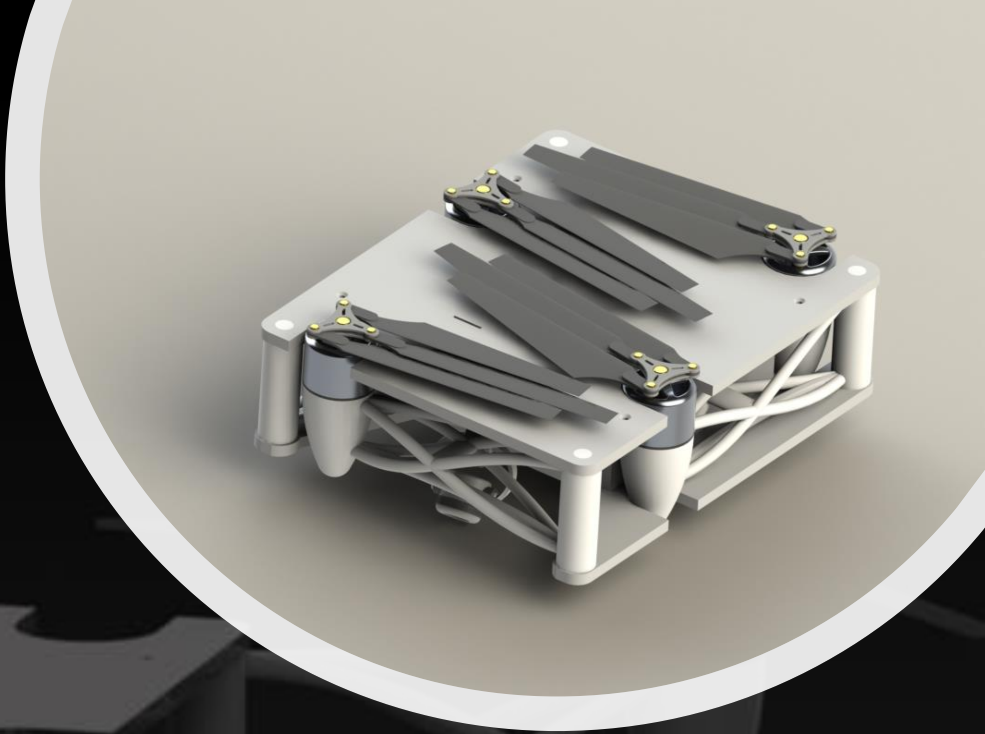
Notes:
-- All parts are ABS, all dimensions in mm
-- 5 mm DIA fillet on each of the 4 corners, 1 mm DIA fillet on all other outside edges of assembly, though not on pattern of holes, nor on the cutout for the button wheel.
-- Speaker holes are 2.5 mm diameter, pitch is 6 mm in both directions.
-- For button wheel, largest disk is 1.5 mm thick, middle sized disk is 1.5 mm thick, and smallest disk is 1.5 mm thick.
-- The three indicators on the button wheel are 0.5 mm proud of surface.
-- Top cover is 18 mm tall, bottom cover is 12 mm. The total assembly thickness is 30 mm
-- The total assembly mass should be between 58 and 61 grams.
-- All unspecified dimensions are left to the designer's discretion.

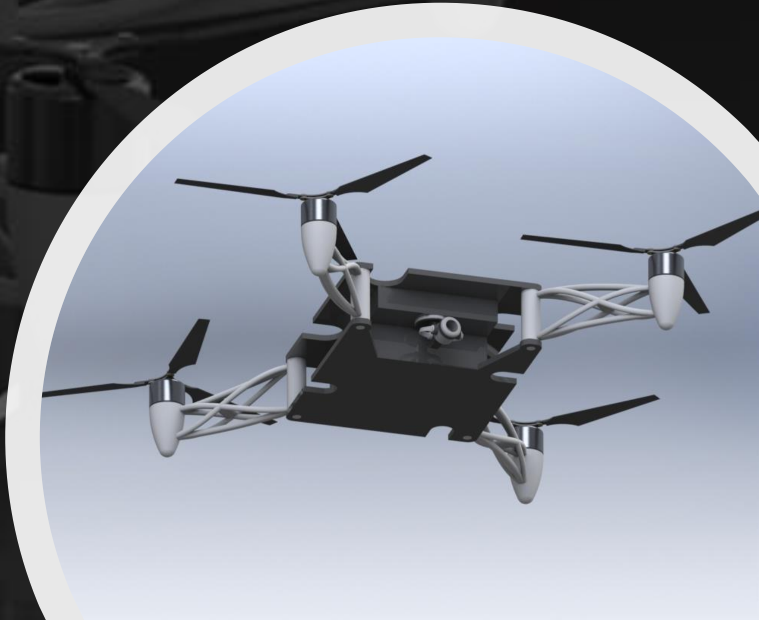


Completion time: 9 minutes 17 seconds.

Group Work

- Objective: Work in a team of 3 to create a conceptual folding drone. Divide work and set constraints so individual work is cohesive as a whole.



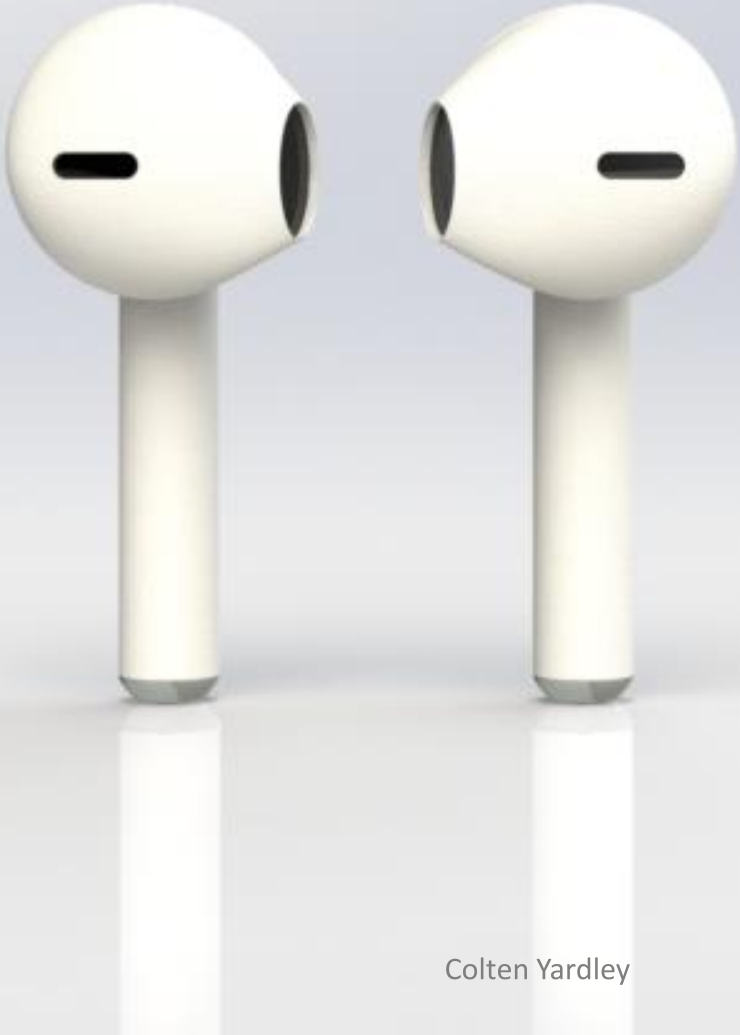


Compressor Wheel

Completion Time: 6 minutes 57 seconds.

Colten Yardley

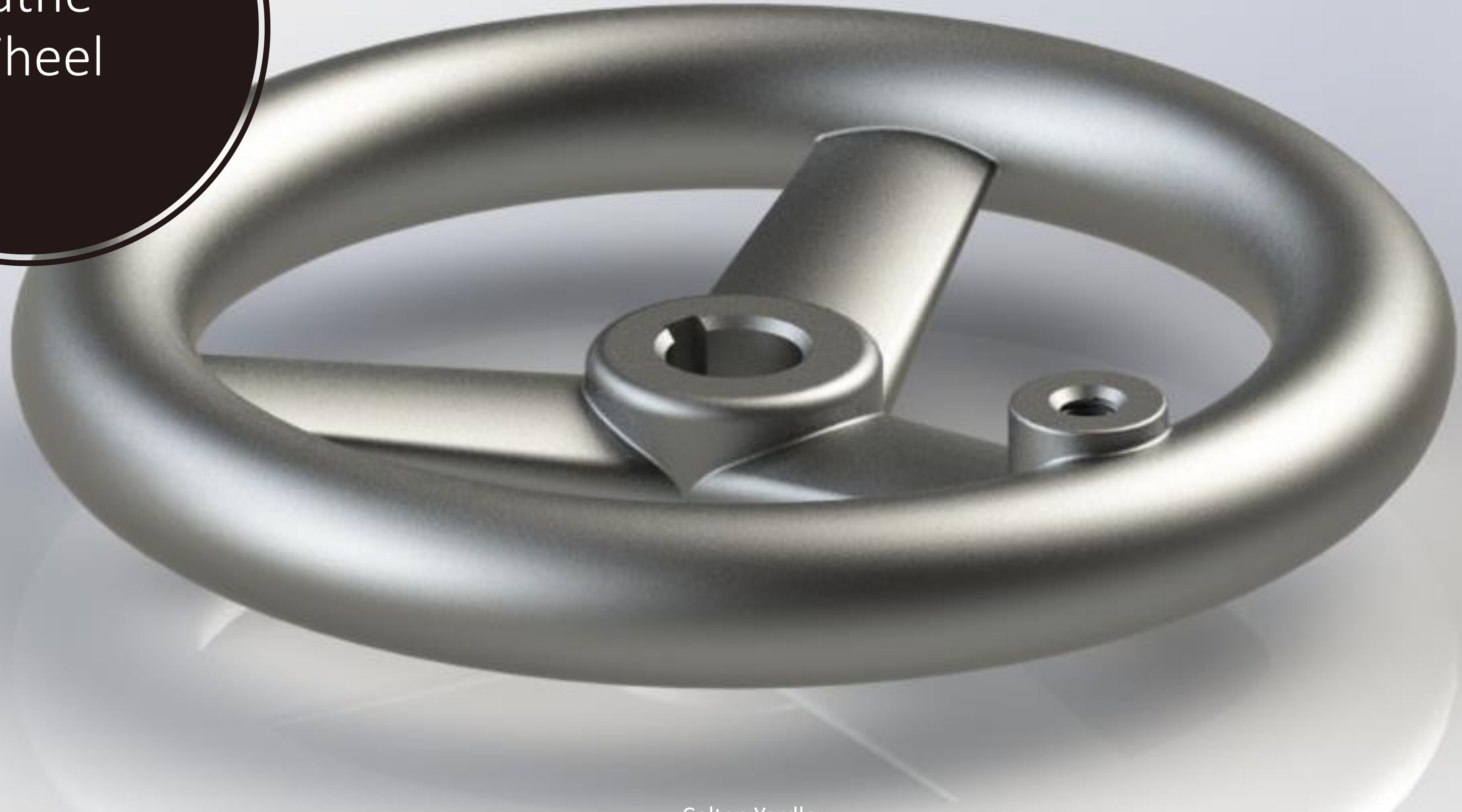
Apple Airpods



Completion Time: 13 minutes 11 seconds.

Colten Yardley

Lathe Wheel



Colten Yardley